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ABSTRACT

The use of Restricted Environmental Stimulation Therapy (REST) as a treatment procedure was evaluated with eight autistic children of two age groups: 6 to 8 years and 9 to 11 years. The stimulation of the environment was reduced to a minimum for 48 hours. Psychological assessment was performed as well as measures of Ss' learning rates on discrimination tasks and behavior ratings. Preliminary results indicated that stimulus restriction did not appear to be aversive for autistic children. (CL)

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THE USE OF "REST" AS A THERAPEUTIC TREATMENT MODEL FOR THE AUTISTIC CHILD: A PILOT STUDY

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Abstract

THE USE OF "REST" AS A THERAPEUTIC TREATMENT MODEL FOR THE AUTISTIC CHILD: A PILOT STUDY

This project will investigate the use of Restricted Environmental Stimulation Therapy (REST) as a potential therapeutic treatment procedure for autistic children. Eight autistic children of 2 age groups - 6 to 8 years and 9 to 11 years - will be involved in the study. They will be divided at random into an experimental and control group shortly before the experimental procedure begins.

Several of the major theories concerning autism and similar dysfunctions have identified information processing problems as a major mediating variable in the production of symptoms. Stimulus overselectivity results in the responsivity of the child to a relatively small subset of the entire array present. Given such a tremendous reduction in the range of stimuli sampled and attended to, the probability of responding to irrelevant members of the total set is quite high. It may be that the cognitive mechanism is overwhelmed by inputs. It is thus the intention of this study to reduce the stimulation in the environment to a minimum for a period of 48 hours to determine whether natural defenses against overstimulation will be relaxed and whether normal stimulus hunger will be activated. We will be particularly interested in whether rate of learning is accelerated as a result of the experimental procedure.

In addition, a sophisticated assessment battery for autistic children is being developed to provide objective measurement of the effects of this treatment on rates of learning new tasks, a social behavior, stereotyped self stimulation, etc.

Extensive biomedical investigation, which will include physical and neurological examinations and radiologic and laboratory tests, will be undertaken in conjunction with this project.

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Experimental procedures will begin with baseline cognitive, educational, behavioral and linguistic assessment, followed by 6 weeks of pre-trial training in 18 separate sessions to establish rates of learning and behavioral baselines. A 48 hour period of either the REST or hospital WARD condition will be followed by 6 weeks of post-trial learning in 18 separate sessions to determine the effect of the REST procedure on rate of learning. A post-test on the factors in the baseline assessment will complete the behavioral part of the study.

I expect that preliminary results of this study will be available by the end of June and should prove interesting to our colleagues interested in the study of infantile autism.

Geraldine Schwartz, Ph.D.

The Use of R.E.S.T. as A Therapeutic Treatment Model for the Autistic Child: A Pilot Study

Schwartz,G.J.; Suedfeld, P.; Woods, T.; Kelly, D.

In the late 1960's a study was conducted by 4 child psychiatrists, Schechter, Shurley, Toussieng, and Maier, using a sensory deprivation environment for three 5 year old autistic boys at the Children's Memorial Hospital in Oklahoma.

The Subjects

The subjects were very socially withdrawn, and did not make meaningful eye contact. They were involved entirely with inanimate objects to the exclusion of animate ones. Two of the boys had no speech, the third boy's speech was uncommunicative and echolalic. They were uncertain about the children's intellectual capacities. No specific psychological assessments were reported.

Rationale

The theoretical rationale for this study was that autistic defenses were directed against overwhelming inner and outer stimuli. They suggested that these children were unable to deal with this stimulus overload due to a defective C.N.S. filtering system. They proposed to provide an environment markedly reduced in both inanimate and social stimulation. This they hoped would have 2 effects:

1) create a stimulus hunger for the social contact and interaction the boys had previously avoided;

2) make the subjects more comfortable with the input load, thereby providing a more balanced relationship between incoming stimuli load and reception interpretation capacity - thus reducing the need for strong autistic defenses.

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The Setting

The setting was a regular 10 x 12 foot hospital room with attached washroom facilities, across from the nursing station at the clinical Research Centre attached to the Children's Memorial Hospital. The room was modified to provide a low stimulus environment, bare of furnishings, except for a mattress. The room was insulated against outside light and sound. Inner light intensity was 5 watts, temperature was regulated at 76°F, and a ceiling fan masked incidental noise. The boys remained in the room for 40, 68 and 73 days respectively.

The Treatment

A microphone connected to the intercom at the nursing station provided constant auditory monitoring. The nurses observed for 5 minutes every 2 hours through the observation window. Food trays were provided and allowed to remain for 20 minutes before being removed. A therapist entered the room for 10 - 15 minutes twice a day. At first he passively accepted approaches from the child, but later became more active in initiating and responding to interaction.

Results

The children appeared not only comfortable but happy and pleased in the experimental room. Sounds of babling and laughter were emitted. They made no attempt to leave the room even when these opportunities were available.

As the experiment progressed to the later stages the boys were more accepting of social interaction with project staff and their parents, and even initiated some of this interaction. They each showed a marked increase of meaningful eye contact. Their babbling became more distinct and by the end each was heard to say distinct and appropriate words.

The 3 boys showed definite decrease in withdrawal and in autistic defenses. Other positive changes in behavior are reported anecdotally.

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Results (Continued)

After this experience the 3 boys were able to attend nursery school and enjoyed and profited from this experience.

Beyond Schechter et. al.

The present study goes beyond Schechter et. al. (1970) in a variety of ways.

1. We wondered whether the long period of time used was essential to produce the desired effect, and whether a relatively short period such as 48 hours would produce any of the positive effects reported. The experimental R.E.S.T. literature has demonstrated good effects for adults after only 24 hours of confinement.

2. We hoped to demonstrate more specifically that a reduced stimulation environment was not aversive, and perhaps even a comfortable, pleasant experience for autistic children.

3. Previous studies have shown that a period of R.E.S.T. improves learning. We hoped to demonstrate this empirically by setting up a 6 week period, prior to the R.E.S.T. experience, in which data was collected 3 times a week, for 6 weeks, on the children's rate of learning performance. An identical data collection followed the R.E.S.T. experience. This data was analyzed using a time series analysis.

4. The literature shows that a period of R.E.S.T. increases desire for social interaction. In this study, we hoped to demonstrate empirically that, after a short 48 hour period, the children's desire for social contact and their performance of socially appropriate behavior would improve.

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Beyond Schecter et.al. (Continued)

4. A play period was set up before each of the 18 pre and 18 post learning trials where several of the children were present in a playroom setting while awaiting their turn for the learning trials. Behavioral observations and coding of social interaction and behavior were taken systematically on the following 17 behaviors:

1. Eye contact with adult
2. Eye contact with child
3. Self-initiated communicative speech
4. Responsive communicative speech
5. Communicative gesturing
6. Situationally irelevant vocalisation
7. Vocal expression of positive affect
8. Facial expression of positive affect
9. Vocal expression of negative affect
10. Facial expression of negative affect
11. Ritualistic, repetitive motor behavior not involving an object
12. Ritualistic, repetitive motor behavior involving the unproductive use of an object
13. "Appropriate" use of an object
14. "Appropriate" intentional physical contact with another person
15. Physical "aggression" toward another person
16. Physical "aggression" toward objects
17. Self-inflicted injury

5. Assessment of autistic children has been a difficult problem for diagnostic and hospital centers, particularly when the staff has only a fleeting experience with these children. Standardized test material delivered verbally is generally too difficult for even the highest functioning autistic child. Bizarre behavior and difficulty in maintaining attention and eye contact interferes with performance in the test situation and many of these children were considered untestable. Their achievement scores were at the bottom

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Beyond Schechter et.al.(Continued)

5. level of the tests used and were a reflection of what they could not, rather than what they could, do.

In this study, we hoped to put together a battery of assessment procedures that would be practical and useable within a regular assessment setting and that would provide baseline information in both behavioral and cognitive development, so that it could be used in later program design. We also hoped to provide data for a pre and post assessment of these children for our study that would be varied and sensitive enough to indicate progress on several fronts should any progress occur.

The following instruments were used for this purpose:

1. Goodenough-Harris Draw a Person Test
2. Boehm and Slater Cognitive Skills Assessment Battery
3. Peabody Picture Vocabulary Test
4. Krug, Arick, Almond Autism Screening Instrument for Educational Planning (Education subtest, modified Autism Behavior Checklist)
5. Leiter International Performance Scale

6. Intensive behavioral observation of autistic children in a confined setting.

Since the subjects would be constantly monitored for the 48 hour period by nurses and a psychology monitor, we had the opportunity to record in minute detail everything the subjects did during that period.

A 48 hour behavioral record taken every 15 minutes by the observing nurse provided a detailed record. These behaviors were coded and graphed on transparencies, for inter-behavior comparison. This could provide new insights into the pattern of autistic behavior and will be a useful source of data for future research. Fifteen minutes of structured behavior recordings were also taken

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Beyond Schechter et.al. (Continued)

6. by the psychology monitors at least 20 times during the 48 hour period.

7. In order to provide some comparison data on the effects of the R.E.S.T. condition versus an equivalent period of hospitalization, a control group was used.

8. Videotaping of behavior in a small playroom immediately prior and immediately following both the R.E.S.T. and WARD conditions would provide good comparison data for future study.

9. An intensive biomedical assessment, related to hypotheses concerning the biochemical and physiological substrates of the autistic syndrome, was conducted at Children's Hospital following the completion of the behavioral study as an integral part of this project.

It should be remembered that this was intended as a pilot study and a learning experience for the newly formed B.C. Autism Research Team, which consisted of 21 members, including psychologists, paediatricians, biochemists, immunologists, nurses, educators, and a representative for the Pacific Association for Autistic Citizens (P.A.A.C.), the community group of parents and professionals.

The objectives of this study were to learn as much as possible about:

1) the use of R.E.S.T. as a potential therapetuic treatment for autistic children;
2) the assessment of autistic children;
3) biomedical factors surrounding the autistic syndrome.

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Rationale

The rationale of this study was similar to the one proposed by Schecter et. al.,that the etiology of autism involves a dysfunction of the filtering mechanism, whereby irrelevant and excessive stimuli are warded off by normal information processes, so that autistic children are continuously bombarded by sensory information overload. Autistic behavior is then conceived of as a defensive technique for avoiding the problems caused by stimulus bombardment; it would follow logically that a reduction in the level of external stimulation would make these defenses less necessary, and should lead to more appropriate information processing and more adaptive behavior. In addition, stimulus and social hunger should make the children more responsive to social and non-social reinforcers, and enable him or her to attend more effectively to the stimuli that are presented in the course of learning or other experiences.

The Subjects

Through correspondence and conversations with representatives of Laurel House, a local residential facility for autistic children,and of the PAAC a total of eight children were identified who were appropriate for inclusion in the study, and whose parents volunteered to participate. There were 5 boys and 3 girls; 4 between the ages of 5 and 7 years and 4 between 9 and 11 years. The children were matched by age and then four of these were randomly assigned to the R.E.S.T., and four to the control, condition.

The Setting

The children spent 48 hours (one weekend) in a specially furnished room of the Children's Hospital. It was carpeted; all existing furniture and fixtures were removed or completely covered. The room was equipped with a dim light bulb (7 watts), an intercom system, and a one-way vision screen. During all R.E.S.T. sessions, a nurse and a member of the research team were present constantly and monitored the

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The Setting (Continued)

subject both visually and over the intercom, from the next room. Food and toilet facilities were brought in whenever needed. The child slept on a mattress placed on the floor; no other furniture was present in the room.

The control condition consisted of 48 hours spent in the Children's Hospital Care By Parent Ward. Because of scheduling problems, only 3 of the originally scheduled 4 children went through this procedure.

Procedures

All children were assessed by the psychological battery previously described at the beginning of this paper. This was followed by 6 weeks (3 times a week) of rate of learning trials on a discrimination task designed and conducted by the team members at Laurel House. In the last week, the matched pair scheduled for the hospital experience were divided at random. One experienced the R.E.S.T. condition; the other, the WARD condition.

Intensive recording of behavior occurred as described under both conditions. This was followed by 6 weeks of post rate of learning trials, 3 times each week. At the end of this period, a post psychological assessment with the same battery was administered. At the conclusion of this part of the study, each child is being admitted to a 48 hour hospitalization period for an intensive biomedical investigation.

Results to Date

1. Response to the R.E.S.T. condition

It is of interest that each of the children involved in this study appeared to find the small playroom experience aversive prior to R.E.S.T. They did not demonstrate any appropriate toy play. One child protested loudly about going in and spent the rest of the time looking out the window and emitting various self-stimulating behaviors. One little girl

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Results to Date (Continued)

1. Response to the R.E.S.T. condition

sat in the corner looking at the ceiling, biting her hand and crying, although her younger sister was squealing with delight as she tackled the toys. We jokingly concluded that aversion to the playroom would be a good test for autism, since hundreds of normal children, including those who were retarded, were delighted by this room. One might hypothesize that the stimulus overload provided by this setting was aversive. In contrast, none of the children produced stress responses to the R.E.S.T. environment. They did not protest at being left alone. They were told that they were here to have a good rest. The pyjamas and the mattress further suggested that view, even to those who did not understand the verbal explanation. They were told to ask for the toilet when they needed it. Within minutes, they were exploring the enviroment visually and tactually, in contrast to their unwillingness to do this in the playroom. They tried the door, but did not seem distressed to find it locked.

Detailed behavior recording allowed a coding and graphing of stress and nonstress responses for each child. These behaviors were carefully checked with parents and Laurel House staff against the regular responses. These graphs are presented for your perusal. (See Appendix I).

A quick glance should indicate that R.E.S.T. was not a stressful experience for our subjects. This provides data to support the Schechter et. al. finding. On leaving the R.E.S.T. condition, one child went to meet his parents. He immediately reported "I'm fine," as if to say that it wasn't too bad after all. None of the children seemed distressed at seeing the R.E.S.T. room in subsequent hospital visits. One of the boys took his younger brother to see his room.

It is interesting to note that each of the subjects found the playroom less aversive after the R.E.S.T. experience. The little girl who cried in the corner sat quietly and fingered several toys without protest.

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Results to Date (Continued)

The post testing for the psychological assessment has just been completed and the results will be analyzed this summer. The rate of learning trials and behavior ratings are being subjected to a time series analysis and will also be analyzed at the same time.

At this stage, we have learned a great deal about the assessment of autistic children in a variety of ways and consider that factor in itself an important gain.

The biomedical part of the project is currently underway.

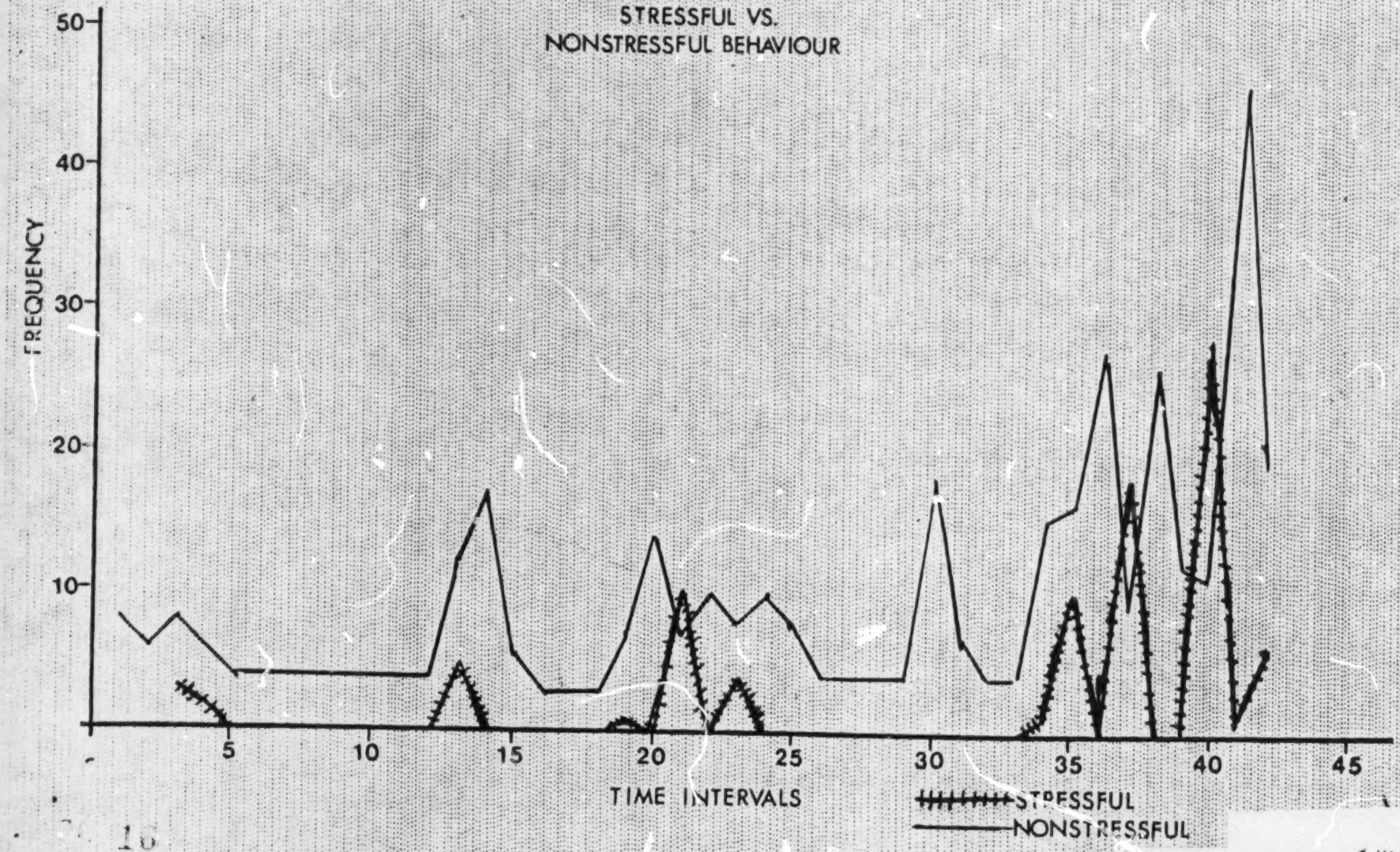
Discussion

Inasmuch as this study appears to be among the first using systematic data collection on the effects of sensory deprivation in autistic children, and on children in general, it has provided a great deal of important information for future research.

While the number of children was admittedly small, this study demonstrated empirically that stimulus restriction does not appear to be aversive for autistic children. They were willing very shortly after entry to explore their environment in their customary way, especially using a tactile approach. In contrast, they appeared to be distressed by the high stimulus environment of the playroom. They did not explore, or engage in interaction with the objects in that room. They tended to sit or stand in a corner, self-stimulate and shut the room out. The most usual activity was to stare out the window situated in the corner of the room. These findings are in accordance with the theory presented in the rationale of this paper that autistic children have difficulty dealing with the stimulus overload in the natural environment, and thus use autistic defenses as a technique to avoid excessive stimulus bombardment.

It is presently the intention of the research team to analyze the data already collected and to use both the findings and the experience gained in this pilot sutdy to design more systematic studies. It is of particular interest to combine the use of R.E.S.T. with other therapeutic techniques to magnify the effects, as has been done with R.E.S.T. in other areas of research.

APPENDIX I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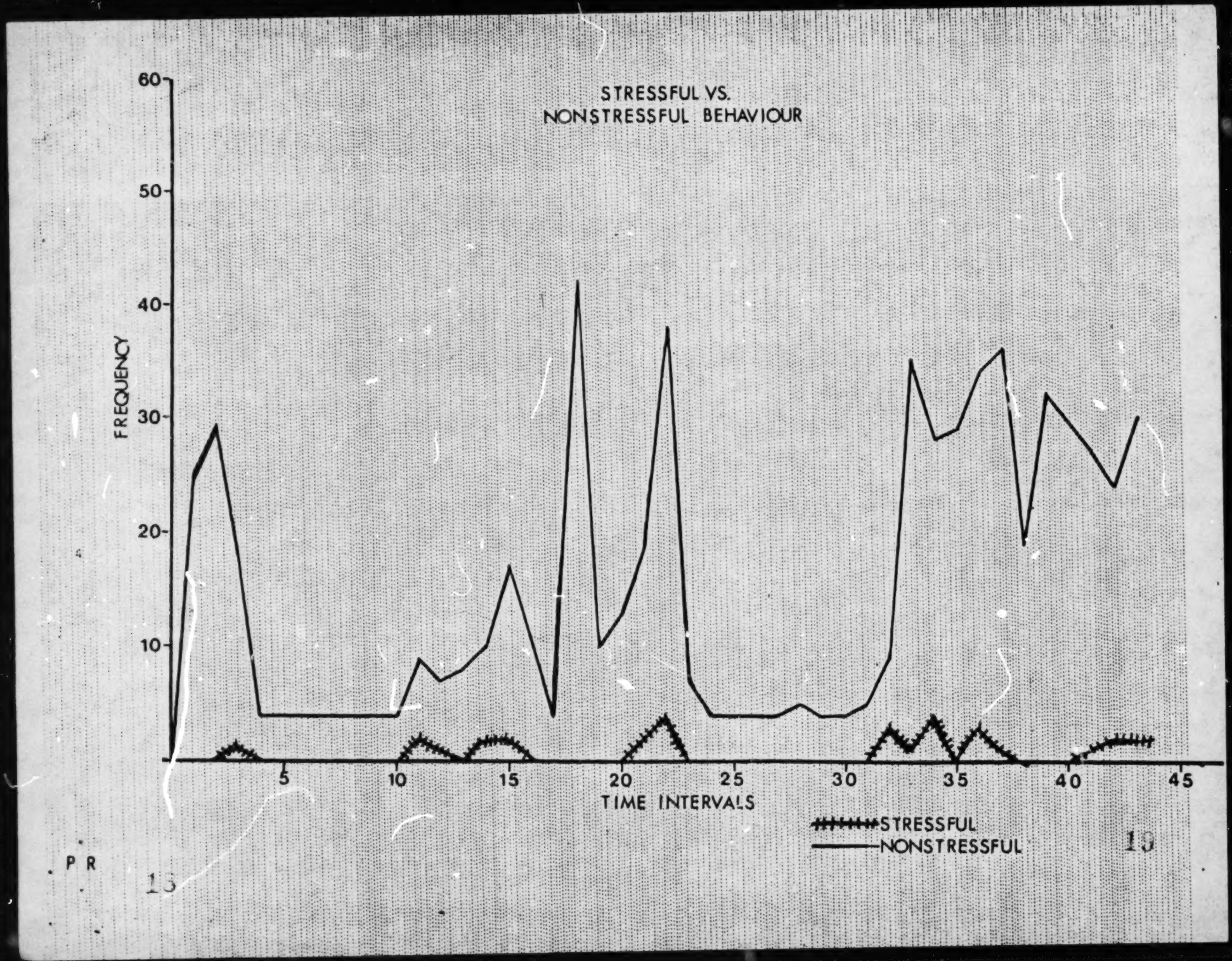
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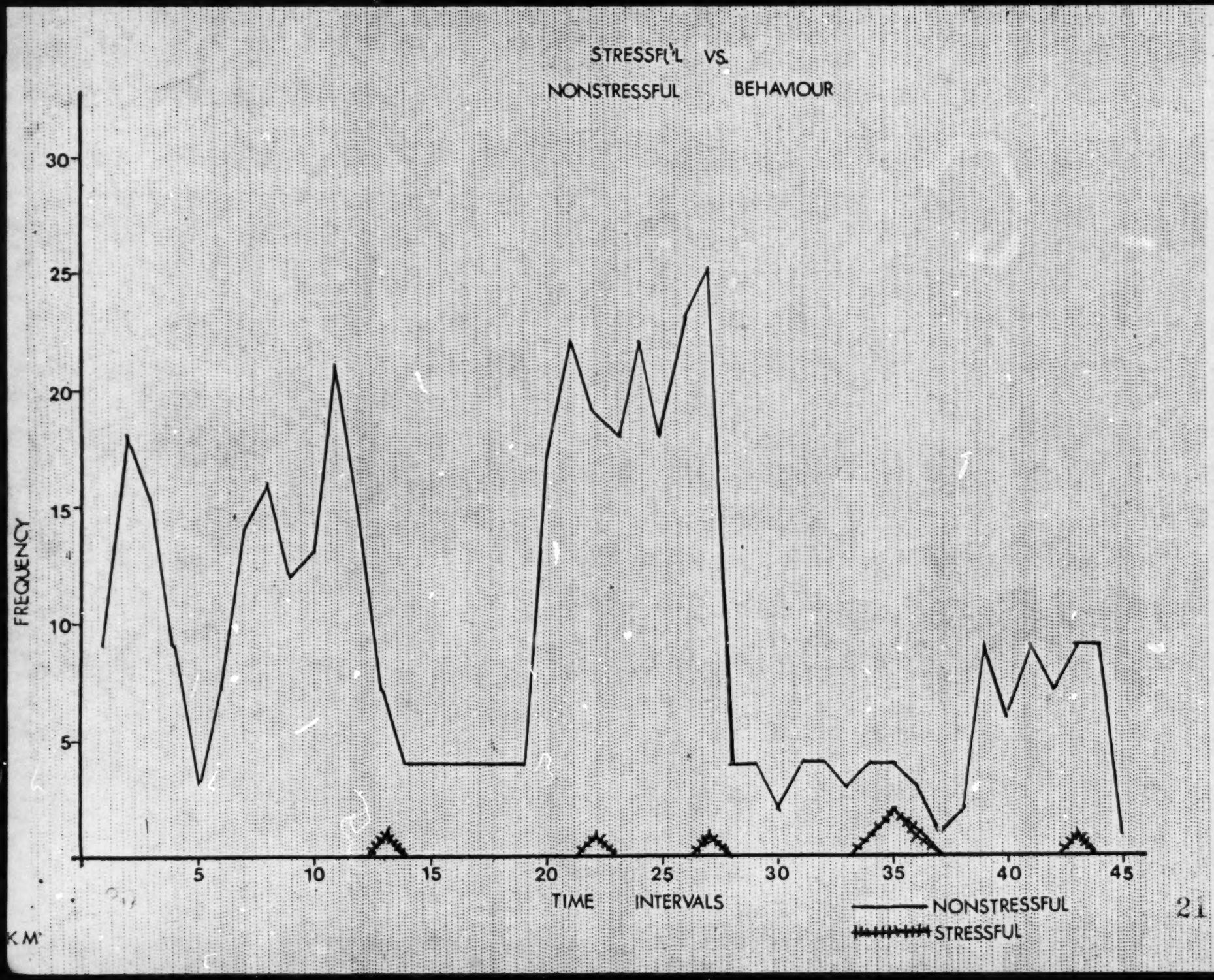
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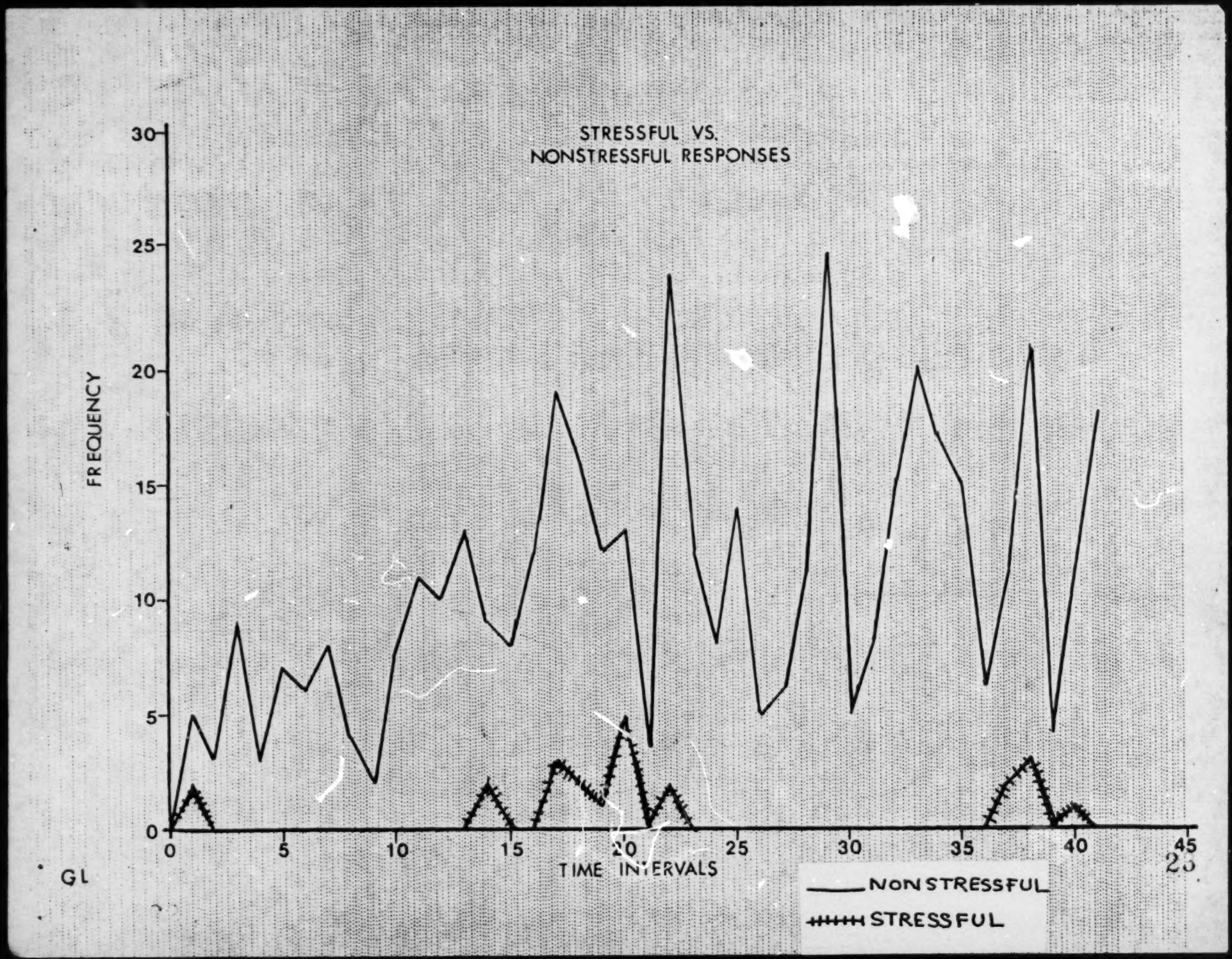
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